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A HIGH-VOLTAGE VACUUM SWITCH,(U)
MAR 82 V V YEFREMOV, Z S GUBALYUK
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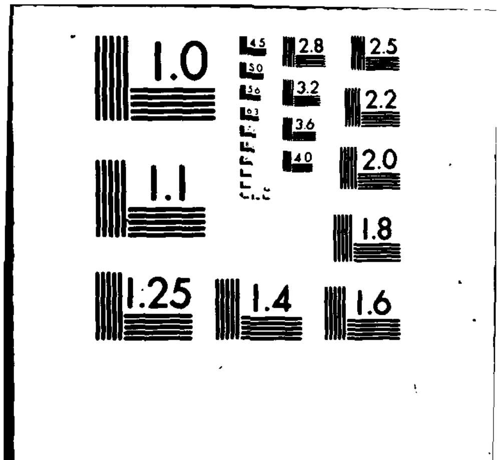

MICROCOPY RESOLUTION TEST CHART

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FOREIGN TECHNOLOGY DIVISION

A HIGH-VOLTAGE VACUUM SWITCH

by

V.V. Yefremov, Z.S. Gubalyuk and L.A. Poznyak

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EDITED TRANSLATION

FTD-ID(RS)T-0164-82 3 March 1982

MICROFICHE NR: FTD-82-C-000276

A HIGH-VOLTAGE VACUUM SWITCH

By: V.V. Yefremov, Z.S. Gubalyuk and L.A. Poznyak

English pages: 3

Source: USSR Patent Nr. 205092, 13 November 1967, pp. 1-2

Country of origin: USSR
Translated by: Victor Mesenzeff
Requester: USAMICOM
Approved for public release; distribution unlimited.

U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	*А а*	A, a	Р р	*Р р*	R, r
Б б	*Б б*	B, b	С с	*С с*	S, s
В в	*В в*	V, v	Т т	*Т т*	T, t
Г г	*Г г*	G, g	У у	*У у*	U, u
Д д	*Д д*	D, d	Ф ф	*Ф ф*	F, f
Е е	*Е е*	Ye, ye; E, e*	Х х	*Х х*	Kh, kh
Ж ж	*Ж ж*	Zh, zh	Ц ц	*Ц ц*	Ts, ts
З з	*З з*	Z, z	Ч ч	*Ч ч*	Ch, ch
И и	*И и*	I, i	Ш ш	*Ш ш*	Sh, sh
Й й	*Й й*	Y, y	Щ щ	*Щ щ*	Shch, shch
К к	*К к*	K, k	Ъ ъ	*Ъ ъ*	"
Л л	*Л л*	L, l	Ы ы	*Ы ы*	Y, y
М м	*М м*	M, m	Ь ь	*Ь ь*	'
Н н	*Н н*	N, n	Э э	*Э э*	E, e
О о	*О о*	O, o	Ю ю	*Ю ю*	Yu, yu
П п	*П п*	P, p	Я я	*Я я*	Ya, ya

*ye initially, after vowels, and after ъ, ь; e elsewhere.
When written as ё in Russian, transliterate as yё or ё.

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	$\sinh^{-1}$
cos	cos	ch	cosh	arc ch	$\cosh^{-1}$
tg	tan	th	tanh	arc th	$\tanh^{-1}$
ctg	cot	cth	coth	arc cth	$\coth^{-1}$
sec	sec	sch	sech	arc sch	sech^{-1}
cosec	csc	csch	csch	arc csch	csch^{-1}

Russian	English
rot	curl
lg	log

A HIGH-VOLTAGE VACUUM SWITCH

V. V. Yefremov, Z. S. Gubalyuk
and L. A. Poznyak.

There are high-voltage vacuum switches containing two hollow ferromagnetic cores, which have contacts on the ends, located in an arc-suppression chamber. The cores are attached freely to the ends of the leads to the arc-suppression chamber by means of the springing elements arranged in them and are controlled by an external magnetic field.

The springing elements are in the form of cylindrical or conical springs made of tungsten wire, which can serve as current leads only with low currents in the circuit of contacts.

The switch being proposed is different from these in that it uses bellows as the springing elements, which are mounted in the inner cavity of the cores and which are precompressed; in this case, each of the bellows is connected to the core with one end and to the lead-in with the other.

The bellows are attached to the end of the lead-in by means of a sleeve with a stem located inside the bellows and the ring encompassing them on the outside. The end of the lead-in, to which the bellows are attached, is in the form of a truncated cone, with a notch with protruding teeth made on the cylindrical belt of the cone's base and the edge of the sleeve's stem is bent over the base.

This makes it possible to increase the service life of the switch and improve its reliability. Furthermore, this construction of the switch ensures complete electrical connection of the bellows with the

lead-in and prevents the rotation of the sleeve.

The use of bellows as the springing elements of a free suspension of the cores realizes the advantages of a vibration-stable system with two freely suspended cores moving opposite to one another in the region of stronger currents.

Fig. 1 shows the switch cut along the longitudinal axis; Fig. 2 shows the attachment of the bellows to the lead-in.

Precompressed bellows 2 are placed inside the cylindrical ferromagnetic cores 1. The bellows are attached to the end of lead-in 3 by means of sleeve 4 with a stem and ring 5.

The end of the lead-in has the form of a truncated cone whose base is provided with a notch to preclude the rotation of the sleeve.

The bellows are coupled with the cores by means of end inserts 6. The edges of the bellows are unfolded and are clamped at their conical protrusion.

The cores are placed into a vacuum bulb 7 whose internal surface is coated with a shielding layer 8. On the outside the bulb is encompassed by a magnetic system consisting of a magnetic conductor 9 and control winding 10.

Patent Claims

1. The high-voltage vacuum switch, which has an arc-suppression chamber containing two moving hollow ferromagnetic cores, which have contacts on the ends, are freely attached to the ends of the leads to the arc-suppression chamber by means of the springing elements located in them, and are controlled by an external magnetic field, is **distinguished** by the fact that to increase the service life and reliability, bellows are used as the springing elements which are installed in the inner cavity of the cores and which are precompressed; in this case, each of the indicated bellows is connected to the core with one end and to the lead with the other.

2. The switch described in paragraph 1 is **different** in that to ensure complete electrical connection of the bellows with the lead, the latter are attached to the end of the lead by means of a sleeve with a stem, located inside the bellows, and a ring encompassing them on the outside.

3. The switch as described *in paragraphs* 1 and 2 is **different** in that to prevent the rotation of the sleeve, the end of the lead, to which the bellows are attached, is in the form of a truncated cone whose base is provided with a groove having protruding teeth, made in the cylindrical band and the edge of the sleeve's stem is bent over the base.

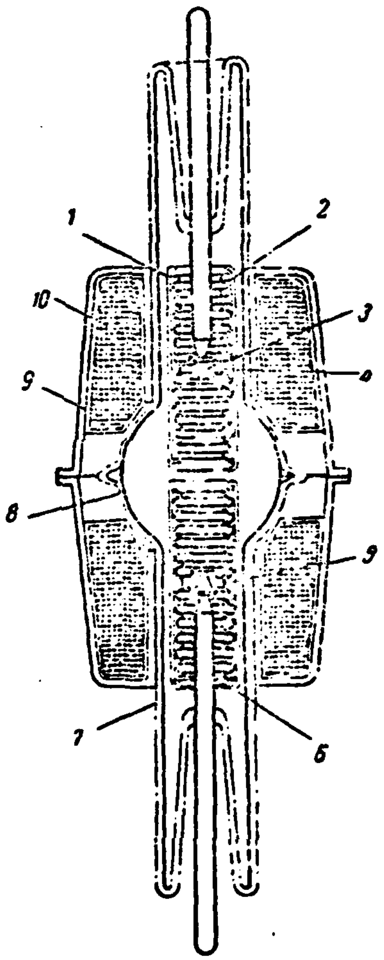

Fig. 1.

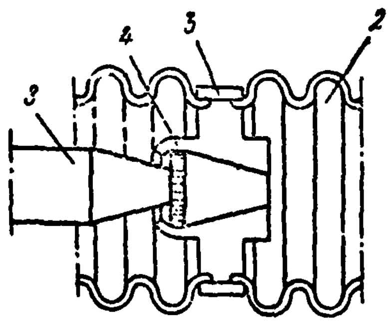

Fig. 2.